

PORTABLE AVIONICS



Portable VHF radios: Sporty's SP-400 Shines

Call 'em suspenders with over-equipped glass panels or a belt in a stark LSA, but we think portable transceivers still have a place in today's cockpit.

by Larry Anglisano

Despite the ridiculous backup common to modern cockpits, the portable radio is the last resort when all other options fail. But not all are created equal, and add-ons, such as an external antenna connection, can play seriously into performance and cost. Here's our hard-nosed report.

Our criteria: Portables must have a high-end transmitter with a modulator that can reach reasonable distances at altitude. They must offer a headset interface. They must be small enough to stow in a map pocket but large enough for easy use in high-workload emergencies.

GETTIN' THE GEEK OUT

Nearly all portable airborne radios offer roughly one watt of transmit power

(which is still way more than your average cell phone). Contrast this to a panel-mount radio that transmits 10-15 watts of power and you see why an external antenna is almost a required accessory for serious use of a portable.

Quality of the built-in microphone also matters. In our view, headsets are required when using any portable com in the cabin of a piston aircraft. But there could be a time when your only headset fails and your portable is your only option.

We saddled each transceiver to a calibrated spectrum analyzer and measured both transmit power output and receiver sensitivity. We also tested the nav receivers in the units that were so equipped with a calibrated nav-signal generator, injecting a signal direct into the unit's receiver and

We found Vertex units, like this VXA-300 performed well, but have a complex operating logic that hampers their utility.

radiating a signal to the unit's rubber antenna.

We used them in flight (and dropped two on a Piper flap handle), stuffed them into our unorganized flight bag and strutted around the airfield with them in our cargo pants. We even tested them in our kitchen over morning coffee where, despite roughly 12 miles of hilly terrain between us and the airfield, all but the Vertex units could pull in the ATIS at half-open squelch.




SPORTY'S OLD AND NEW

The SP-200 has always represented a good value, in our view. It's a no-nonsense unit that we applaud for its simple, yet rugged, design. We think Sporty's offers the most robust units of the ones we tested. It's also the largest in the group, measuring 6.65 inches tall, 2.35 inches wide and 1.46 inches deep. It weighs 16.64 ounces with battery pack. This isn't a problem unless you want to stuff the thing in your pocket.

The real issue we had with it—and others we tested—is the number of AA batteries it requires: eight in all. There is a NiCad option but Sporty's recommends using alkaline because their storage life is more predictable when used for backup emergency use. To its credit, the duty cycle when running on alkaline is quite good. If you limit your transmissions and display lighting, its stamina is over 15 hours. In our three weeks of testing, we never had to change batteries.

The controls and lockable keypad are hearty and easy to use. Simple

CHECKLIST

-  Great performance at reasonable cost.
-  Handy for ATIS and clearances as well as emergencies.
-  External antenna virtually required for good range.

PORTABLE RADIOS	STREET PRICE	SIZE	RECEIVER	STANDARD ACCESSORIES
ICOM IC-A24	\$299	5.7 X 2.1 X 1.6	COM / VOR / NOAA WX	HEADSET ADAPTER, CASE, BELT CLIP, RECHARGEABLE BATTERY PACK
ICOM IC-A6	\$249	5.7 X 2.1 X 1.6	COM / NOAA WX	HEADSET ADAPTER, CASE, BELT CLIP, RECHARGEABLE BATTERY PACK
ICOM IC-A14	\$199	4.5 X 2.0 X 1.5	COM / VOR / NOAA WX	RECHARGEABLE BATTERY PACK, BELT CLIP, HAND STRAP
SPORTY'S SP-200	\$299 DIRECT	7.2 X 2.3 X 1.5	COM / VOR / LOC	AA BATTERY PACK, WRIST STRAP
SPORTY'S SP-400	\$399 DIRECT	5.5 X 2.5 X 1.4	COM / VOR / LOC / GS	AA BATTERY PACK, WRIST STRAP
VERTEX VXA710	\$299	4.5 X 2.5 X 1.2	COM / VOR / NOAA WX / BRS / FM	LITHIUM-ION BATTERY, BNC ANTENNA ADAPTER
VERTEX VXA300	\$219	5.5 X 2.5 X 1.4	COM / VOR / NOAA WX	NIMH BATTERY, BNC ANTENNA ADAPTER, HEADSET ADAPTER, BELT CLIP
VERTEX VXA220	\$179	4.0 X 2.4 X 1.2	COM / NOAA WX	NIMH BATTERY, BNC ANTENNA ADAPTER, HEADSET ADAPTER

volume and squelch knobs and a last frequency recall button are nicely spaced apart on the top of the case while the transmit and display and key light button are on the side. You can easily pick this unit up and use all of its features without touching the manual. We especially liked the Clear key that erases a digit if you botch a frequency entry, and frequency memory storage.

The nav side includes a VOR and Localizer receiver that allows for OBS selection and includes electronic CDI at the top of the LCD display. We found the nav receiver to be excellent, with solid reception in the aircraft and on the test bench using the BNC-

connected rubber antenna.

We wished the unit came with a headset adapter as standard, but at \$199 it's tough to complain. Popular options include the NiCad battery, external power plug, carry case and spare AA battery cases.

Sporty's offered us the first look at the new \$399 SP-400. Unique to this unit is a glideslope receiver, which could save your hide if you had to slide down an ILS with a dark panel. The SP-400 performed exceptionally well, with the localizer receiving down to 115 dB and Glideslope down to 95 dB going direct into the receiver. Our technician marveled, admitting it was better than some panel-mounted

gear. He was equally impressed with the unit's com performance, noting crisp modulation and decent receiver sensitivity. The unit has good transmit sidetone (the sound of your voice you hear when you transmit) with headsets.

The SP-400 is comfortable in hand and the LCD display is sharp, but we weren't impressed with its side viewing angle. This is common with monochrome LCD screens. Display backlighting helps.

Like the lesser SP-200, this unit uses AA alkaline batteries that offered plenty of juice during our testing. If this unit was to be used as a primary (and for some applications we think it's worthy) we suggest connecting an external 12 volts. There's a headset adapter standard, but it impressed us with clean modulation from the internal microphone and a reasonably-loud speaker.

ICOM

The popular A24 is the flagship model from ICOM and features com and nav functionality (the A16 is an identical unit less navigational functions). ICOM brags of the unit's single-handed operation for use while flying and it fits the task, in our view. With battery pack it measures 5 3/32

Sporty's SP-400 hits the target of rugged construction and simplicity without sacrificing any essential functions. It's also the only unit with a glideslope receiver.





Sporty's SP-200 (center) is a bit big. ICOMs (right-hand two) are a good balance of small case and sizable buttons. Sporty's new SP-400 is about the size of the Vertex VXA-300 (second from left).

inches tall by 2 1/8 inches wide by one inch thick, and weighs roughly 15 ounces. This proved to be a near perfect stature for a portable. When we first started using the unit we found some of the controls to be out of place. For instance, the Squelch is adjusted by pressing a dedicated Squelch key and then setting threshold with the right rotary knob. We wished for a dedicated, one-shot squelch adjustment.

Throughout our testing we grabbed the more prominent rotary knob at the top of the case to adjust the

volume. Wrong control. This knob changes the frequency (a feature we like rather than keying it in from the keypad.) But even so, this knob we found annoyingly close to the flexible antenna.

The nav feature is easy to use and offers both To/From navigation and the current radial. It also shows a CDI. It wasn't as good a performer as the Sporty's in nav mode and seemed susceptible to RF interference. We like the NOAA weather radio alert function when plugged into a wall outlet (the weather function can

also be used when on the air-band). There's a 200-channel memory bank for frequency storage, which might be overkill. All the ICOM units have a good display with easy-to-read characters in all lighting conditions. The unit has a 1650 mAh NiH battery with excellent endurance. A double-A pack is available.

ICOM's A14 is a communications-only portable with a special 700mW loudspeaker using a BTL amplifier (essentially dual amplifiers that drive both ends of a speaker load). For the electronically challenged, this makes the A14 output loud. So loud, in fact, that we used the A14 while taxiing a Grumman Tiger with its canopy slid open and could easily communicate with ground control during a maintenance run-up.

The copy we tested had the optional six-battery AA alkaline pack that gave the unit a large footprint. Standard is the Li-Ion pack advertised at 18 hours of use. We like the simplicity of the A14 as well as its rugged case and easy to use buttons. We don't care for the squelch keys that are built into the side of the case, below the trans-

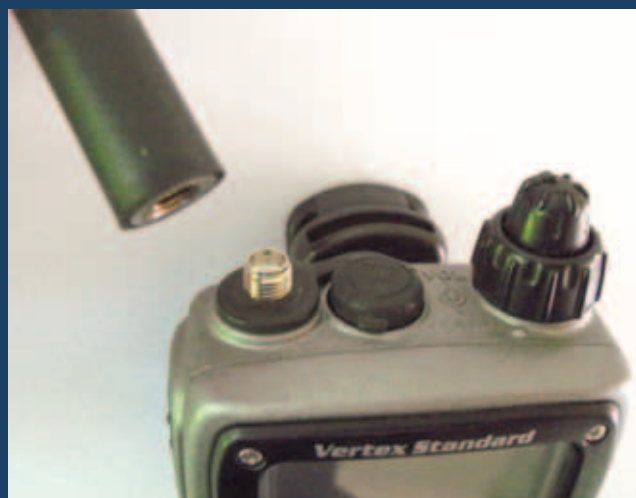
GOT RANGE? TRY IT WITH AN EXTERNAL ANTENNA

A watt of power broadcasting from a portable rubber antenna inside a cabin isn't going to offer much performance. Any chance of transmitting and receiving as far as a panel-mounted com requires an external antenna.

The only real expense in installing a dedicated antenna for the portable is opening the interior to mount it and run coaxial cabling to a convenient spot in the cockpit. A simple metal-element antenna is around \$100. Fiberglass whips are closer to \$200. Some such installations include a panel-mounted antenna jack while others simply have antenna cable coiled up in a map pocket ready for quick connection. You'd need an expensive splitter for a portable and a panel mount to share an antenna and it just isn't worth it for rare emergency use.

A beneficial time to install an auxiliary com antenna system is when the aircraft is already opened up for other work. If your shop is installing new primary com antennas there's usually no reason not to utilize one of the older antennas for emergency use. If you are pulling out a

now-useless Loran-C system, this leaves an open antenna location for installing an aux com antenna. Your shop can even use the existing coaxial cable.



mit key, that bring up a squelch value on the display. We prefer a dedicated knob.

VERTEX STANDARD

We own an older Yaesu portable amateur radio and can say that these Vertex aviation units don't come close to the Yaesu we have grown to like. We're impressed by the small size, as well as some smart features, but remain unimpressed with the feel and occasional quirkiness of the controls. We don't like the SMA antenna connections as it requires using an included adaptor if connected to most external antenna setups. It also took us a bit to figure out the screw-in style microphone and headphone jack at the top of the case.

The smart features include a keypad beep when punching in frequencies (which the Sporty's doesn't have) and the bright, dot-matrix displays. We also like the battery-saver function which sends the unit's receiver into hibernation mode when quiet.

One day we had the VXA300 and ICOM A24 side by side on our desk for testing and found the Vertex would sometimes clip the first part of a reception, receiving a second or so after the ICOM. We assume this was from the receiver coming out of hibernation. The transmitter was good: over a watt of carrier on the scope and a high-quality modulator.

The VXA-300 Pilot III is a com and nav (the VXA-220 is com only but with a loudspeaker). Controls are not as intuitive as the Sporty's or ICOM models. For instance, the on/off rotary knob serves triple-duty as power, volume and menu access. You press the knob for accessing unit menus. It's not bad, just different and we envision some owners stumbling.

The VXA-300 performed well in the real world and the unit's stature proved perfect for ease of carrying and single-handed use. The nav receiver was spot on with the on-board GNS430W. Interesting is variable audio tone (audio pitch, really) control that can be set for a specific condition. We think panel-mounted radios can benefit from this feature. There's also a voice-actuated function for

hands-off use. For instance, when a headset is plugged in the unit will automatically begin transmitting, similar to a VOX intercom.

The VXA-710 is a submersible, tiny com and nav unit measuring 4.5 inches by 2.5 inches by 1.2 inches that's the absolute smallest of the group. While it may be easy to carry, its buttons were just too small for our fingers. The zero key was placed in an awkward location in the keypad. But this wasn't nearly as awkward as the feature-set.

For days we couldn't find a squelch adjustment on the 710. We finally reached for the manual and learned it was buried in a menu. In fact, a couple of times we turned the unit off and then back on because we got so lost in button-pushing. We think it's too complex for an airband backup or primary.

Keypads and LCD screens are illuminated in Vertex Standard's renowned Omni-Glow amber hue, for increased visibility and minimal impact on your night vision. Omni-Glow can be configured for both brightness and contrast. We can't come close to covering all of the features that these Vertex models offer, which gives you an idea of how complex they are.

CONCLUSION

Gulf Coast Avionics in Lakeland, Florida, graciously provided us with many of the test samples for this article. We mention this because both ICOM and Vertex ignored our requests for units to review, while Sporty's, on the other hand, went above and beyond.

Perhaps each company was showing clairvoyance as our top pick is the Sporty's SP-400. Its performance is clearly exceptional and worthy for sole means navigation, including an emergency ILS. At \$395 before discounting it's a solid bargain.

After using the SP-200 and 400, we found ourselves annoyed by the busy



Part of the budget SP-200's bulk is the eight-cell battery pack. Alkalines do have a more reliable shelf life.

feature set of the competitors. Simple is better in an aviation portable.

For a well-rounded, reliable and feature-rich portable, we have no problem recommending the ICOM A24, but the extra dough for the nav function is questionable, in our view. We might instead opt for the IC-A6. The way we see it nearly everyone who flies IFR, or even VFR, has a portable GPS that would be superior to navigating by a VOR using a handheld. If you are a HAM we suspect you would be fond of the VXA710, to add to your collection of radio toys.

Lastly, if you're looking for decent in-flight performance from any portable, install an external antenna. That should ensure reliable communications when things go to hell—which is why we buy these things in the first place.

Larry Anglisano puts the screws to review avionics at Exxel Avionics in Hartford, Connecticut.

CONTACTS

ICOM
800-872-4266
www.icomamerica.com

Sporty's Pilot Shop
800-776-7897
www.sportys.com

Vertex Standard
714-827-7600
www.vertexstandard.com